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Container having a pressure-rupturable seal for dispensing contents.

Abstract:

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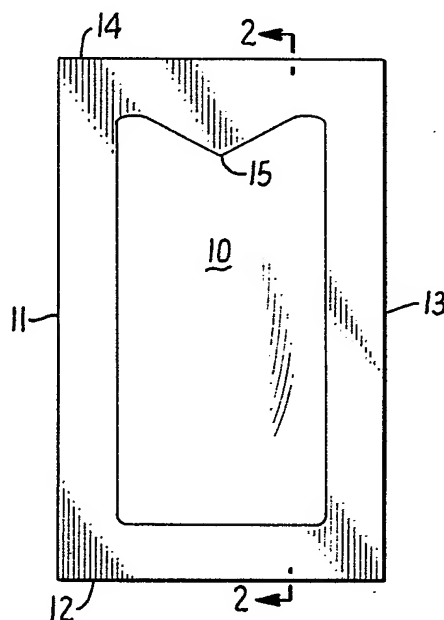
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(54) **Container having a pressure-rupturable seal for dispensing contents.**

(57) The invention concerns a sealed container comprising two layers of thermoplastic film heat sealed together, a vee-shaped area being formed as part of the heat-seal pattern, with the apex of the vee (15) directed toward the interior of the container. When pressure is applied to the container, such as by squeezing it, the heatseal ruptures, beginning at the apex of the vee (15), and continuing through the heatseal in a well defined path. As a result, the contents of the container, such as an individual serving of ketchup, can be dispensed from the container in a controlled manner.



EP 0 078 761 A2

CONTAINER HAVING A PRESSURE-RUPTURABLE SEAL FOR DISPENSING
CONTENTS

This invention concerns sealed containers of the type which are ruptured to dispense their contents. Such containers are used, for example, to package single servings of such substances as ketchup, mustard and syrup. The containers that are conventionally used for this purpose are made from a flexible sheet material, such as thermoplastic film, that has been heatsealed to form the container. The problem with such containers is that the heatseal must be torn open to dispense the contents, which is often difficult and which often results in uncontrolled flow of the contents. Attempts to overcome this problem are disclosed in US Patents 3 601 252 and 3 913 789, but such attempts require the formation of a weak seal. This invention provides an improvement in such containers which does not require the formation of a weak seal.

The improvement provided by this invention is a seal in such containers that is easily ruptured at a desired location by the application of pressure to the walls of the container. The seal forms a projection substantially in the shape of a vee, with the apex of the vee directed toward the interior of the container. When external pressure is applied on the walls of the container, the seal ruptures at the apex of the vee and the rupture propagates in a well defined path through the seal to permit controlled flow of the contents from the container.

In order that the invention may be fully understood reference is made on the following drawings wherein:

Figure 1 is a front view of a container according to this invention.

Figure 2 is a sectional view of the container of Figure 1 along line 2-2.

Figure 3 is a front view of the container shown in Figure 1 after the seal has been ruptured by the application of pressure to the walls of the container.

Figure 4 is a front view of another embodiment of a container according to this invention.

Figure 5 is a front view of still another embodiment of a container according to this invention.

The container comprises a wall 10 made from a flexible sheet material that is impermeable to the contents of the container. The sheet material is preferably a heatsealable plastic film having one or more layers. The film may be laminated to other materials, such as paper or metal foil. If the flexible sheet material consists of more than one layer, the inner layer is preferably a heatsealable thermoplastic resin.

10 Edges of the wall 10 are sealed to each other along marginal areas 11, 12, 13 and 14 to form the containers. The seal is preferably formed by heat sealing, but an adhesive may be used if desired. Although in the embodiment shown in the drawings the container is sealed along its
15 entire perimeter, other embodiments are possible. For example, the container can be formed by folding a single sheet of flexible material over on itself, and sealing the two sides and top of the container, the bottom of the container being the fold. Similarly, the container may be formed from a
20 seamless tube that is sealed at both ends. In any event, the container is sealed so that it is sufficiently airtight so that when an external pressure is applied to the container, an internal pressure corresponding substantially to the external pressure is developed in the container.

25 The essential feature of the invention is that a marginal area 14 of the container is formed by sealing together two edges of the wall 10 of the container in a certain pattern. The rest of the construction of the container is conventional. The seal pattern that is formed at marginal area 14 includes
30 a sealed area projecting into the interior of the container, the projection being substantially in the shape of a vee 15, with the apex of the vee being directed toward the interior of the container. As previously explained, when pressure is applied to the container, such as by squeezing it, the
35 resultant internal pressure developed in the container causes the seal to begin to rupture at the apex of the vee 15, and to continue to rupture in a well defined path through the seal, as shown in Figure 3. The seal ruptures at marginal area 14 solely because of the vee-shaped seal pattern, not because the seal at marginal area 14 is other-

wise weaker than the seal at marginal areas 11, 12 and 13. However, the seal at marginal area 14 could, of course, be made weaker than the seal at the other areas if desired.

5 The optimum shape of the vee 15 depends on the size of the container and the strength of the seal at the marginal area 14. For example, a sharper angle makes the container easier to open, but it also reduces the space with the container available for the contents. For any particular
10 container one could readily determine the optimum shape of the vee 15 by routine experimentation. However, for most applications, the shape of the vee 15 is preferably such that the sides of the vee substantially form an angle having a size between 30 and 120 degrees, more preferably
15 between 45 and 90 degrees. The apex of the vee 15 is preferably a point, but may be rounded. Similarly, the sides of the vee may be curved rather than straight.

Figure 4 shows an embodiment of this invention wherein the marginal area 14 includes an unsealed area 16 which
20 defines a channel extending from the peripheral edge of the marginal area 14 to the area of the vee 15. The unsealed area 16 is in the path of the expected propagation of the rupture of the seal. Hence, when external pressure is applied to the container, the rupture which initiates at
25 the apex of the vee 15 continues to the unsealed area 16, thereby permitting controlled flow of the contents of the container through the channel defined by the unsealed area 16. If desired, a rigid plastic tube (not shown) could be placed in the unsealed area 16 when the marginal area 14
30 is sealed to provide a better channel for dispensing the substance packaged in the container.

Figure 5 shows an embodiment of this invention wherein a section of the peripheral edge of the marginal area 14 is intended in the shape of a vee which substantially
35 parallels the vee 15 formed by the seal pattern. An advantage to this embodiment is that the length of the path of the rupture through the marginal area 14 is less than in embodiments such as shown in Figure 1.

Although this invention has been described with
40 particular reference to relatively small disposable con-

tainers for dispensing condiments, the invention is also applicable to larger containers for dispensing other substances, such adhesives, hand creams, etc. The substance is
5 preferably a liquid, but a solid substance, such as sugar or coffee, or even a gaseous substance can be dispensed from the container in accordance with this invention by providing an amount of air or other gas in the container to develop an internal pressure which is sufficient to rupture the seal
10 when external pressure is applied to the container.

CLAIMS:

1. A sealed container of the type which is ruptured to dispense a substance packaged therein, said container
5 having a wall of flexible sheet material having edges that are sealed together at a marginal area of the container, characterized in that the seal at the marginal area forms a projection substantially in the shape of a vee (15) with the apex of the vee (15) directed toward the interior
10 of the container, whereby when external pressure is applied to the container, the seal ruptures at the apex of the vee (15) and the rupture propagates in a well defined path through the seal, thereby permitting controlled flow of the substance from the container.
- 15 2. Sealed container according to claim 1 characterized in that the marginal area (14) includes an unsealed area (16) defining a channel extending from the peripheral edge of the marginal area (14) to the area of the vee (15) the unsealed area (14) being in the path of the rupture,
20 whereby when external pressure is applied to the container, the rupture propagates to the unsealed area (16), thereby permitting controlled flow of the substance from the container through the channel defined by the unsealed area.
3. Sealed container according to claim 1 characterized
25 in that the seal is a heatseal.
4. Sealed container according to claim 1 characterized in that the flexible sheet material is a heatsealable thermoplastic film.
5. Sealed container according to claim 1 characterized
30 in that the flexible sheet material is a laminate wherein the inner layer is heatsealable thermoplastic resin.
6. Sealed container according to claim 1, characterized in that a section of the peripheral edge of the marginal area (14) is indented in the shape of a vee which sub-
35 stantially parallels the vee (15) formed by the seal at the marginal area (14).

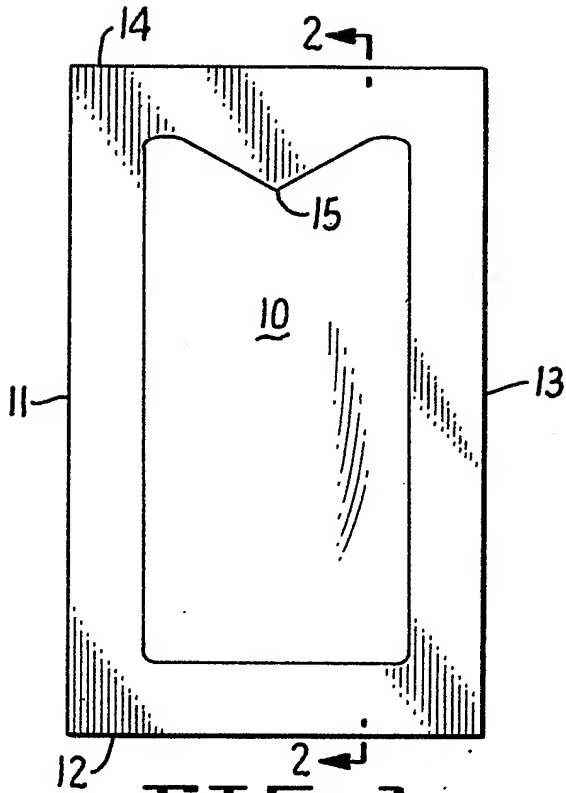


FIG. 1.

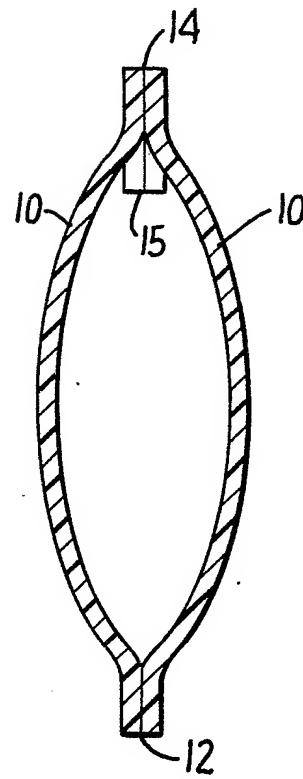


FIG. 2.

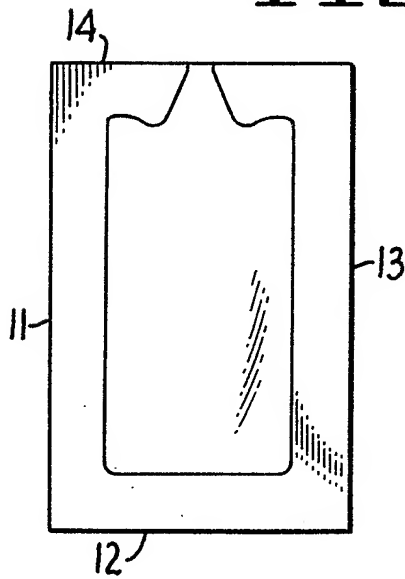


FIG. 3.

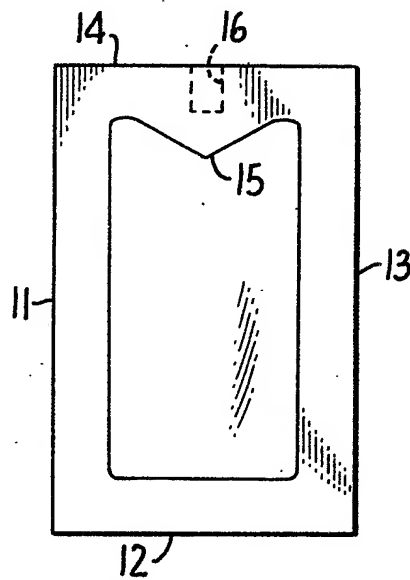


FIG. 4.

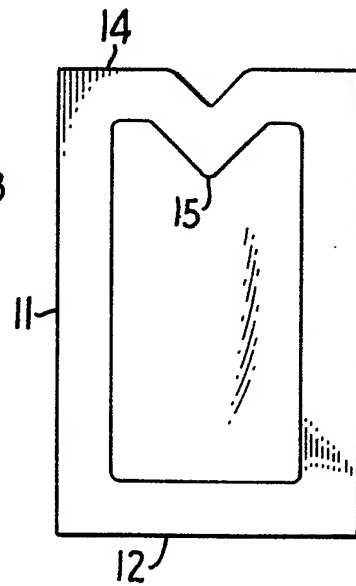


FIG. 5.